SciVerse ScienceDirect

Procedia - Social and Behavioral Sciences 28 (2011) 226 – 230

Procedia
Social and Behavioral Sciences

WCETR 2011

Learning management system through assignment box alert

A.Noraziah[a,*], Azizul bin Aziz[a], Tutut Herawan[a], Roslina Mohd Sidek[a], Handrizal[a], Mohammad F.J. Klaib[b]

[a]*Faculty of Computer Systems and Software Engineering,Universiti Malaysia Pahang, Lebuhraya Tun Razak, Gambang 26300, Kuantan, Pahang, Malaysia*

[b]*Faculty of Science and Information Technology, Jadara University, Irbid- Jordan*

Abstract

Learning Management System (LMS) is software that has been developed for the administration, documentation, tracking, and reporting the educational resources. Assignment Box Alert (ABA) is a type of LMS which has been developed to manage the student in assignment submission. Before the development of ABA, the submission assignments from the students to lecturer have been done manually either through the hardcopy by printing material or softcopy by using the compact disc. The manual system consumes lot of time, besides quite easily being damaged or misplace. In this project, the development of ABA using the Remote Method Invocation has able to manage the assignment submission efficient and effectively. This is due the transferred file by student can be view more systematically by the lecturer, while at the same time the notification from the system remind the student to upload assignment on time.

Keywords : ABA, RMI, LMS, RAD, client-server.

1. **Introduction**

Learning Management System (LMS) is software that has been developed for the administration, documentation, tracking, and reporting of training programs, classroom and online events, e-learning programs, and training content [1]. The robust LMS able to automate administration, self-service and self-guided services, assemble and deliver learning content rapidly, consolidate training initiatives on a scalable web-based platform, support portability and standards, personalize content and enable knowledge reuse [2]. Assignment Box Alert (ABA) is a type of LMS which has been developed to manage the student in assignment submission. ABA provides the facility for the file transferring between student and lecture. Through this system, lecture can sent any exercise or assignment to the student based on the client-server model. ABA implement on the use of Remote Method Invocation (RMI) as a method for communication between server and client [3]. In addition, the submission of assignment document on time is one of important process in completing assessment. This is due to avoid the mark deduction, thus students need to submit their assignment on the time. Late submission will cause the marking process troublesome for lectures too. Thus, the lectures and students need client-server application to allow submission done easily and more reliable than manual or traditional system.

* A.Noraziah. Tel.: +609-5492121; fax: +609-5492144.
E-mail address: noraziah@ump.edu.my

doi:10.1016/j.sbspro.2011.11.044

Assignment is a task assigned to student for them to solved and perform. Every assignment has to be submitting on the time. But, the process and the method of manual submission are ineffective and consume time. Among the problems face by some student are they misplaced their assignment due to manual system. Besides that, some of the hard copy that student sent which mostly by paper or printing material might easily rip up. Sometime during printing process also can causes some the words can't be read because of printing error. Besides that, because of the characteristic of paper which easily rips up, any force or liquid substance for example water can damaged the document. Besides the manual system, the using of email also is being practice today. But the use of email comes with several problems. Email application required an Internet connection for them to work. So, meant that if the Internet connection is down, the email application is useless. This is because email application is using Internet connection to work out. The using of email which is not reliable due to connection problems as well limitations on file size and type of file that can be submit or transfer causes the use of email is not efficient for file transfer. For example, yahoo mail only limited file to be attach not more than 25 Mb size file.

The objectives of the development of this ABA application are to develop the assignment submission system based on the client-server model application; and apply Remote Method Invocation (RMI). The scopes for this project includes the users of this system are UMP (University Malaysia Pahang) lectures and UMP FSKKP last year students. It is implemented by using the campus LAN network. In particular, the system builds up based on RMI method through the Windows as its operating system. ABA able to transfer word file, data file, image file, video file, web file and compressed files.

2. Methodology

Methodology may be a description of process, or may be expanded to include a philosophically coherent collection of theories concepts or ideas as they relate to a particular discipline or field of inquiry. In this project, we use the Rapid Application Development (RAD) methodology. RAD is a reaction to the then well-established methodologies which emphasized careful and prolonged requirements gathering before the actual software development begins. It considers the creation of quick-and-dirty prototype-style software that fulfilled most of the user's requirements but not necessarily all. The development take place in a series of short cycles namely time boxes, each of which would deepen the functionality of the application a little more. RAD refers to a development life cycle designed that provides faster development and higher quality systems than the traditional life cycle. It has been designed to take advantage of powerful development software like CASE tools, prototyping tools and code generators. RAD is a people-centered and incremental development approach, which considers an active user involvement as well as collaboration and co-operation between all stakeholders. Testing is integrated throughout the development life cycle so that the system is tested and reviewed by both developers and users incrementally. The key objectives of RAD for the ABA system are high speed, high quality and low cost. The RAD life cycle composes of four stages Requirements Planning, User Design, Rapid Construction, and Transition [4].

There are three tasks for the requirements' planning include research current situation, define requirement and finalize requirement. Research current situation initiates the Requirement Planning stage for the ABA system by researching the current environment. The information developed in the initial discussions provides a starting point for this investigation. This research is conducted for preparing the requirements definition. Define requirements involves outlining the system area model and scope of the ABA system are developed in this task. The functionality of the system is expressed in terms of the business processes and the data that the system will support. Management issues that affect subsequent development and transition activities are also identified. Finalize requirements involves the formal documented for the scope of the ABA. An estimate of the cost and duration to implement the system is prepared. The scope must be well defined such that the project is still viable with the cost and duration provided. Approval to proceed with the implementation is then obtained.

The objectives of the User Design stage are to analyze in detail business activities associated with the proposed system area and to develop the system structure in terms of the automated and manual functions that will comprise the ABA system. The objectives of the Rapid Construction stage are:

i. To complete the detailed design of the ABA system;
ii. To create and test the software that implements the proposed system;
iii. To generate a system that operates at an acceptable level of performance;
iv. To prepare documentation necessary to operate the proposed application;
v. To design, develop, and test the required transition software and;
vi. To perform the steps necessary to prepare for the conversion of the system to production status.

The objectives of the Transition stage are to install the system in production operation with minimal disruption of normal business activity, to maximize the effectiveness of the system in supporting the intended business activities and to identify potential future enhancement. The ABA system developed in the Rapid Construction stage becomes operational in the Transition stage. At this time, the developers prepare existing data for the new system and train users to operate the new application. They also provide support to resolve any problems that arise immediately after the application becomes operational.

In this phase, the system flow will be design. To understand how the system work, the flow chart model is use. In particular, the client-server is a network model for computer networking that utilizes client and server devices each designed for specific purpose [5]. The client-server model can be used on the internet as well as local area network (LAN). Client-server networking grew in popularity many years ago as personal computers (PC) became alternative to older mainframe computers. The client-server model distinguishes between applications as well as devices. Network client make requests to a server by sending messages, and servers responds to their clients by acting on each request and returning results [6]. The design considers the Remote Method Invocation [3]. Figure 1 shows the flow of the server site, whereas Figure 2 shows the flow for the client site.

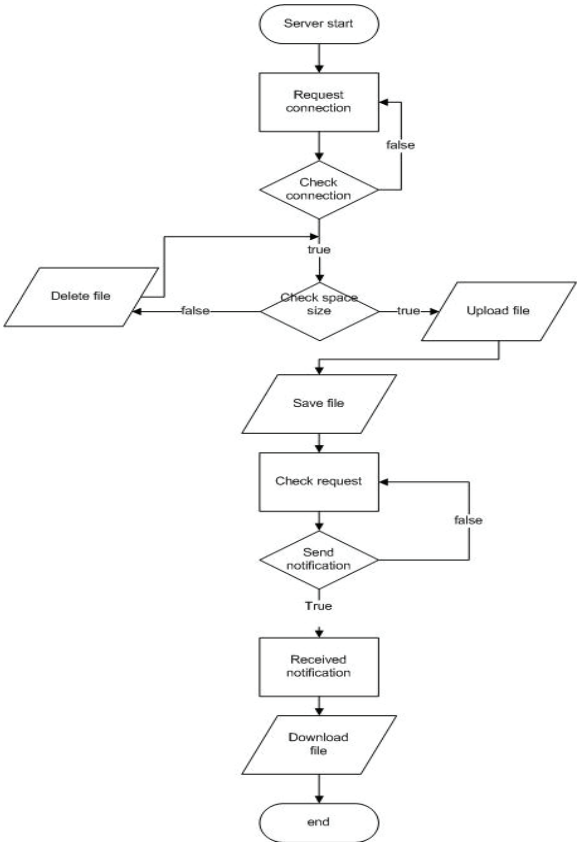

Figure 1: Flow chart for server site

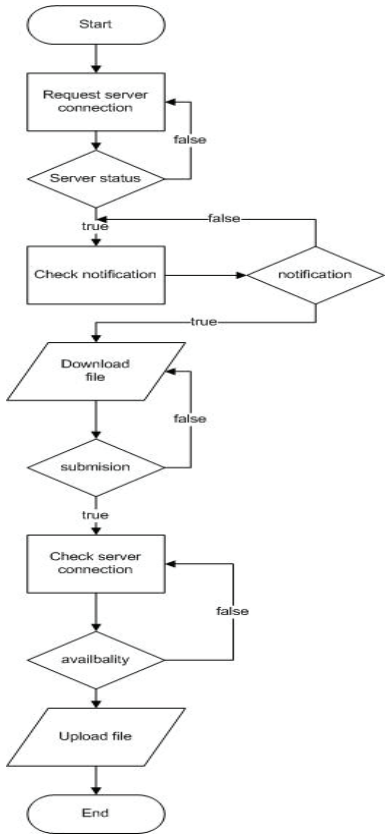

Figure 2: Flow chart for client site

The algorithm for the server application as followed:

1. *Start the server application*
2. *Request connection*
   - *2.1 If connection exist*
     - *2.1.1 Check free space size*
       - *2.1.1.1 If space full*
         - *2.1.1.1.1 Delete selected file*
         - *2.1.1.1.2 End*
     - *2.1.1.2 Free space available*
       - *2.1.1.2.1 Upload file*

2.1.1.2.2 End
2.2 If connection doesn't exist
2.2.1 Request connection
2.2.2 End
3. Save file
4. Check request
4.1 If request exist
4.1.1 Send notification
4.1.2 End
4.2 If request doesn't exist
4.2.1 Request connection again
4.2.2 End
5. Client received notification
6. Client download file
7. End process

Meanwhile, the algorithm for the client application as followed:
1. Client start application
2. Client request server connection
2.1 If server connection exist
2.1.1 Check notification
2.1.2 End
2.2 If server connection doesn't exist
2.2.1 Check server connection again
2.2.2 End
3. Check notification
3.1 If notification exist
3.1.1 Download file
3.1.2 End
3.2 If notification doesn't exist
3.2.1 Check notification again
3.2.2 End
4. Submission
4.1 If submit assignment
4.1.1 Check server connection
4.1.1.1 If connection Exist
4.1.1.1.1 Upload file
4.1.1.1.2 End
4.1.1.2 If connection not exist
4.1.1.2.1 Check connection again
4.1.1.2.2 End
4.2 If not submit assignment
4.2.1 End
5. End process.

4. Implementation

These ABA systems are run by using Microsoft Visual Basic. Visual Basic (VB) is the third-generation event-driven programming language and integrated development environment (IDE) from Microsoft for its COM programming model. Visual Basic is relatively easy to learn and use.Visual Basic was derived from BASIC and enables the rapid application development (RAD) of graphical user interface (GUI) applications, access to databases using Data Access Objects, Remote Data Objects, or ActiveX Data Objects, and creation of ActiveX controls and objects. Scripting languages such as VBA and VBScript are syntactically similar to Visual Basic, but perform differently.

Interface development is one of the important processes in implementation. The interface should be really easy to communicate with the function so that the flow of the system can be understood by the user. For this system, the interface will consist of client interface and server interface. The server interface will be design for the lecture to logging and sent notification about upload file. Meanwhile, for the client interface will be design for student use. Student can received notification from lecture about ongoing assignment and upload any file to lecture

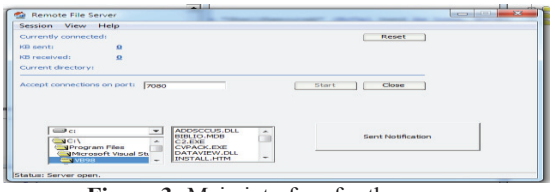

Figure 3: Main interface for the server

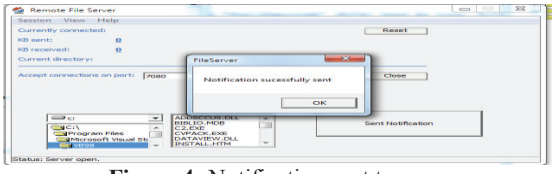

Figure 4: Notification sent to user

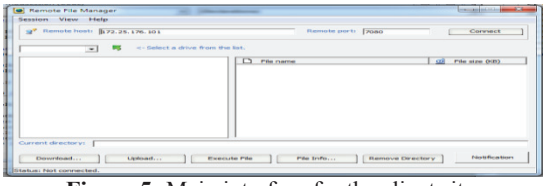

Figure 5: Main interface for the client site

4. Result and Discussion

ABA application is developed based on client-server model because with client-server model, the client-server model can be used on the internet as well as local area network (LAN). In ABA application, the system will implement on the use of Remote Method Invocation (RMI) as a method for communication between server and client. To develop application, ABA has met all the objectives of this project, which are: (1) develop assignment submission system based on the client-server model application, (2) to apply Remote Method Invocation (RMI) in developing the system. The constraint for this project is the system constraints. Here, the ABA system depends on the bandwidth of the network use. So the file transfer speeds are based on the network.

5. Conclusion

ABA application is a client-server application that is develops to help the student to submit their assignment faster and reliable compare with manual system. This system also develop to replace the via e-mail system which sometime unreliable as the system depend on Internet connection which sometime might get down. In future work, ABA system will evaluate and fix the system constraint.

References

[1] Wikipedia, Learning Management System, http://en.wikipedia.org/wiki/Learning_management_system
[2] Ellis, Ryann K. (2009), Field Guide to Learning Management Systems
[3] RMI Client and RMI Server Implementation, http://www.roseindia.net/java/network/rmi-client-and-rmi-server-implementation.shtml.
[4] http://en.wikipedia.org/wiki/Rapid_application_development, last modified on 12 March 2011.
[5] IBM, Getting from use cases to code, Part 1: Use-Case Analysishttp://www.ibm.com/developerworks/rational/library/5383.html
[6] Wikipedia, Methodology, http://en.wikipedia.org/wiki/Methodology, modified on October 2010.